

This Fruit Is a Mass!

Reporting Category Measurement

Topic Estimating and measuring weight/mass

Materials

- A variety of fruits, including, if possible, bananas, apples, oranges, pears, kiwis, grapes, cantaloupes, and plums
- Balances and gram weights for each team of two students
- This Fruit Is a Mass! Recording Sheet (attached)

Vocabulary

weight, mass, estimate, metric measurement system, U.S. Customary system, grams, kilogram, ounce, pound

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

Note: This is not an introductory lesson to U.S. Customary and metric measurement. It is intended to be a culminating activity.

1. Present the following word problem to the class: "John loves fruit. Everybody in fourth grade knows that fruit is his favorite food. He eats fruit all the time. Anyone who brings fruit in a lunchbox always gives the fruit to John, and he is always grateful! John has been sick and out of school for several days. His classmates want to do something nice for him, so they are going to prepare a nice basket of mixed fruit to take to him. How can they prepare a basket of fruit that weighs exactly 5 kilograms?"
2. Display a collection of different fruits. Have the class estimate how much fruit will weigh about 5 kilograms. Allow the class to weigh one apple and discuss the relative sizes of an apple, banana, plum, and other pieces of fruit to help them make a reasoned estimate.
3. Divide the class into pairs to facilitate weighing fruit and recording weights. Give each pair a *This Fruit Is a Mass! Recording Sheet*. Remind students that 1 kilogram equals 1,000 grams. Have each pair weigh each piece of fruit, using a balance and gram weights, record the weights, and then decide on the number of pieces of each kind of fruit that will go into the basket for John so that the fruit weighs exactly 5 kg. Encourage students to try to please John in their combinations of fruit for the basket. Note that a grape weighs approximately 1 gram, but that John would certainly prefer *not* to receive a basket containing 5,000 grapes.
4. Have the class compare their conclusions about the various amounts of fruits. Ask how many fruit combinations can be made.

5. Have students repeat this activity, using ounce weights and aiming to make a basket of fruit that weighs exactly 10 pounds. Remind students that 1 pound equals 16 ounces.

Assessment

- **Questions**
 - If we know that a kilogram equals 1,000 grams, then how many grams will our 5 kg basket of fruit weigh?
 - Did any piece of fruit weigh as much as 1 kilogram? If so, which one(s)? Did any piece weigh as much as $\frac{1}{2}$ kilogram? If so, which one(s)?
- **Journal/Writing Prompts**
 - Write a letter to John explaining how you chose the fruit for his basket.
 - Explain which unit of measure, metric or U.S. Customary, you prefer to use and why.
 - Explain the difference between weight and mass.
- **Other**
 - Observe students as they weigh the fruits. Watch for accurate use of weights, careful recording of weights, and adding weights to make a total of 5 kilograms or 10 pounds. Look for creative combinations of fruits to reach the desired weight. Note discussions and conversations, listening for appropriate mathematical vocabulary and noting correct use of balances and weights.

Extensions and Connections (for all students)

- Discuss whether all pieces of fruit of the same kind weigh the same. Have students estimate the weight of each piece of the same kind of fruit, record the estimates, and compare the estimated weights with the actual weights.
- Have students create fruit baskets and cards to donate to local community organizations.

Strategies for Differentiation

- Have students use a scale that reads in metric and U.S. Customary units instead of a balance.

This Fruit Is a Mass! Recording Sheet

Name of fruit	Weight of one piece	Number of pieces used	Total weight of this fruit
Total weight of all fruit			